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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/608,492

06/30/2003

Richard Conklin

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05/01/2007

CLEMENTS WALKER

1901 ROXBOROUGH ROAD

SUITE 300

CHARLOTTE, NC 28211

EXAMINER

CHOU, ALBERT T

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

05/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|--|--|---|--|
| <p align="center">Office Action Summary</p> | <p>Application No.</p> <p align="center">10/608,492</p> | <p>Applicant(s)</p> <p align="center">CONKLIN ET AL.</p> | |
| | <p>Examiner</p> <p align="center">Albert T. Chou</p> | <p>Art Unit</p> <p align="center">2616</p> | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-20 is/are allowed.
- 6) ☒ Claim(s) 1,8-14, 21-33, 36 and 38 is/are rejected.
- 7) ☒ Claim(s) 2-7,34,35 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because:

(a) Labels or descriptions to each reference components do not match those recited in the specification. For example, "input porter" should be "input sorter". See Figs. 2, 6a-6c, etc.

(b) Reference numbers are not shown in the drawing. For example, Router 68 and Router 8 (see Specification, page 22, lines 5-17).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 13 and 14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,106,729. Although the conflicting claims are not identical, they are not patentably distinct from each other.

For example, Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,106,729. The only difference between the two claims is the following:

Claim 1 of the present application broadens the scope of claim 1 of U.S. Patent No. 7,106,729, by omitting the features of

"logically modeling the switch element and mapping a multi-stage logical model that represents the components of the switch element in multiple stages, comprising an input sorter, an input router, a center stage device, an output router, and an output sorter, to the switch element".

However, it would have been obvious to one of ordinary skill in the art to eliminate unnecessary features from the invention of claim 1 of U.S. Patent No. 7,106,729. The motivation would have been to provide a simpler method for configuring a switch element without logically modeling the switch element and mapping a multi-

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stage logical model that represents the components of the switch element in multiple stages.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 29-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 29 recites the limitation "*the center stage devices are logical center stage switches modeling physical center stage switch devices to expand a number of edges and increase a number of time slots per edge with respect to the physical center stage switch*", which is in conflict with "*a physical center stage switch is modeled as a logical center device by expanding the number of edges and reducing the number of time slots per edge*" as described in the specification (see page 9, lines 5-7 and 21-22) and claim 27.

Claims 30 and 31 depend from claim 29 and, therefore, are rejected on the same basis of rejection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8 and 10-12 recite the limitation "step of post-processing". There is insufficient antecedent basis for the limitation in the claim.

Claim 9 depends from claim 8, and, therefore, is rejected on the same basis of rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-28 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,154,887 to Wu et al (hereinafter "Wu") in view of US Patent No. 4,926,416 to Weik.

Regarding claim 21, Wu teaches a switch element **[Figs. 7A-7D]**, comprising:

ingress devices **[Figs. 7A-7D; Stage 1, e.g. 40A, 42A & 44A]** operatively and respectively connected to ingress data lines **[Figs. 7A-7D; ingress data lines connect to input ports 40A and 40B; col. 6, lines 18-27]**, each of said ingress devices including input routers **[Figs. 7A-7D; Timeslot Interchanges TSI 42A & 42B: col. 6, lines 18-27]**;

egress devices **[Figs. 7A-7D; Stage 3, e.g. 48A, 50A & 52A]** operatively and respectively connected to egress data lines **[Figs. 7A-7D; egress data lines connect to output ports 52A and 52B; col. 6, lines 28-39]**, each of said egress devices including output routers **[Figs. 7A-7D; Timeslot Interchanges TSI 50A & 50B; col. 6, lines 18-27]**; and

center stage devices **[Figs. 7A-7D; Stage 2, e.g. 46A-46D]** operatively and selectively interconnecting said ingress devices and said egress devices;

wherein the input routers operatively and selectively interconnect one of the ingress data lines with a respective input port of said center stage devices **[Figs. 7A-**

7D; Stage 1, TSI 42A & 42B interconnect ingress lines/ports 40A & 40B with an input port of Stage 2 46A-46D];

wherein the output routers operatively and selectively interconnect one of the egress data lines with a respective output port of said center stage devices **[Figs. 7A-7D; Stage 3 TSI 50A & 50B interconnect egress lines/ports 52A & 52B with an input port of Stage 2 46A-46D].**

Wu does not expressly teach each of ingress devices including an input sorter, wherein the input sorter associated with each of said ingress devices operatively connects a respective one of the ingress data lines to a plurality of the input routers; and each of egress devices including an output sorter, wherein the output sorter associated with each of the egress devices operatively connects a respective one of the egress data lines to a plurality of the output routers.

Weik teaches each of ingress devices including an input sorter, wherein the input sorter associated with each of said ingress devices operatively connects a respective one of the ingress data lines to a plurality of the input routers **[Fig. 4; An input sorter 10 is inserted between each input line 41 and the associated input line 42 of the first stage of the switching network 20; col. 4, lines 56-65];** and each of egress devices including an output sorter, wherein the output sorter associated with each of the egress devices operatively connects a respective one of the egress data lines to a plurality of the output routers **[Fig. 4; An input sorter 30 is inserted between each output line 42 of the switching network 20 and the associated output line 43; col. 4, lines 65-68],**

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wu's non-blocking switch to include an input sorter in an ingress device and an output sorter in an egress device as taught by Weik. The motivation for combining the reference teachings would be to allow each input and output line to temporarily store one frame at a time so that input and output Timeslot Interchanges TSIs can perform input and output timeslot selection properly.

Regarding claim 22, Wu teaches the input routers, center stage devices and output routers form a Clos network **[Figs. 2-4, 6, & 7A-7D; a logically equivalent to a 3-stage CLOS network]**.

Regarding claims 23, 24 and 25, Wu teaches each ingress router receives data from only one ingress data line **[Figs. 7A-7D; TSI 42A receives data from an input port 40A]** and wherein each egress router forwards data to only one egress data line **[Figs. 7A-7D; TSI 50A forwards data to an output port 52A]**.

Regarding claim 26, Wu, in view of Weik, teaches the input and output sorters allow switching across a subset of the input and output routers **[See 35 U.S.C. 103(a) rejection to claim 21]**.

Regarding claim 27, Wu teaches the center stage devices are physical center stage switches being modeled as logical center stage switch devices **[Figs. 7A-7D]** to

expand a number of edges and reduce a number of time slots per edge with respect to the physical center stage switch **[Figs. 7A-7D; It would have been obvious in Wu and in a Clos network that Stage 2 enables one physical or logical connection/edge with each TSI, e.g. 42A and 42B, thus reducing the number of timeslots per logical connection while maintaining the same aggregate bandwidth in Stage 2],** and

wherein edges correspond to links between said ingress devices **[Figs. 7A-7D; a physical or logical connection between 44A and 46A]** and said center stage devices and links between said center stages devices and said egress devices **[Figs. 7A-7D; a logical connection between 46A and 48A].**

Regarding claim 28, Wu teaches the switch element, wherein each of the logical center stage devices has one time slot per edge **[Figs. 7A-7D; A middle-stage time slot must be assigned to each connection; col. 2 , lines 41-54].**

Regarding claim 32, Wu teaches the switch element comprising: a switch control module for controlling the switch element **[It would have been obvious that a switch control module loaded or configured with TSTST control algorithm must exist in Wu in order to realize the non-blocking switch's functions of Copy Network and Rearrangeable Clos Network; col. 5, line 30 – col. 5, line 16].**

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 33, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,154,887 to Wu et al (hereinafter "Wu") in view of US Patent No. 5,917,426 to Yoshifuji.

Regarding claim 33, Wu teaches a method for configuring a switch element having ingress devices, egress devices and center stage devices operatively interconnecting the ingress and egress devices **[Figs. 7A-7D]**, comprising:

partitioning the switch element into a logical model **[Figs. 7A-7D]** including input routers **[Figs. 7A-7D; TSIs 42A & 42B]** and output routers **[Figs. 7A-7D; TSIs 50A & 50B]** partitioned within the ingress **[Figs. 7A-7D; Stage 1, e.g. 40A, 42A & 44A]** and egress devices **[Figs. 7A-7D; Stage 3, e.g. 48A, 50A & 52A]**, respectively, wherein each of the partitioned routers within the logical model is assigned to only one data line **[Figs. 7A-7D; TSI 42A is assigned with input port 40A]**; and

determining a subset of excluded connections in an initial configuration of the switch element **[Figs. 6 and 7A-7D; It would have been obvious in Wu that a set of initial connections or configurations of the switch element must be determined**

and configured (namely, excluding those connections or configurations not required for the initial configuration) before the switch can be in operation].

Wu does not expressly teach executing a control algorithm for the connections not present in the subset to establish the initial configuration of the switch element, wherein the subset of excluded connections is excluded from consideration during execution of the control algorithm to establish the initial configuration; and post-processing the subset of excluded connections.

Yoshifuji teaches a switching system, which has a plurality of input devices, a plurality of output devices and a plurality of switch matrices between the input and output devices, determining a subset of excluded connections in an initial configuration of the switch element **[Fig. 2; It would have been obvious in Yoshifuji that a set of initial connections or configurations of the switch element must be determined and configured (namely, excluding those connections or configurations not required for the initial configuration) before the switch can be in operation; col. 5, line 1- col. 6, line 25]**, executing a control algorithm for the connections not present in the subset to establish the initial configuration of the switch element, wherein the subset of excluded connections is excluded from consideration during execution of the control algorithm to establish the initial configuration **[Fig. 2; The Route-Search & Renewal Processing Unit 9 is driven when any disorder in the network management data signals is detected by the Main Control Unit 6; col. 4, lines 61-67, col. 6, lines 11-**

25]; and post-processing the subset of excluded connections **[Fig. 2; The Route-Search & Renewal Processing Unit 9 is driven when any disorder in the network management data signals is detected by the Main Control Unit 6; col. 4, lines 61-67, col. 6, lines 11-25]**.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wu's middle-stage (stage 2) by including the capabilities of restoring or regenerating the connection data signals in the event of any disorder in a Clos network as taught by Yoshifuji.

The motivation for combining the reference teachings would be to provide a Clos-type network switch which is capable of coping with extinction or breakage of connection data signals and thus avoiding unnecessary disruptions of network operations.

Regarding claims 36 and 38, Wu, in view of Yoshifuji, teaches each limitation set forth in its parent claim.

Yoshifuji further teaches processing protection events in switch element without invoking a rearrangement algorithm **[Fig. 2; Switch-Search & Renewal Units 9-1 to 9-n and Route-Search & Renewal Processing Unit 9 are operable to regenerate or recover the interconnection data signals and the network connection data signals, respectively; col. 4, lines 61-67]**; and updating connections for a protection event in an active bank for fast protection event processing without adversely affecting other connections in the switch element **[Fig. 2; renew the interconnection data**

signals stored in the Internal Data Memory 4-1 to 4-n and the network management data signals are renewed and reproduced form the network data memory 8; col. 5, line 65 – col. 6, line 25].

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wu's middle-stage (stage 2) by including the capabilities of restoring or regenerating the connection data signals in the event of any disorder in a Clos network as taught by Yoshifuji.

The motivation for combining the reference teachings would be to provide a Clos-type network switch which is capable of coping with extinction or breakage of connection data signals and thus avoiding unnecessary disruptions of network operations.

Allowable Subject Matter

7. Claims 2-7, 34, 35 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 15-20 are allowed

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Patent Application Pub. No. 2005/0157713 A1 by Klausmeier et al. disclose "Distribution Stage For Enabling Efficient Expansion Of A Switching Network"
- US Patent No. 6,087,958 to Arzt discloses "Multi-Stage Routing Switchers With Sequential And Non-Repetitive Distributive Circuit Interconnections"
- US Patent No. 6,542,655 to Dragone discloses "NxN Crossconnect Switch Using Wavelength Routers And Space Switches"
- US Patent No. 5,745,612 to Wang et al. disclose "Wavelength Sorter And Its Application To Planarized Dynamic Wavelength Routing"

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert T. Chou whose telephone number is 571-272-6045. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Albert T. Chou

April 26, 2007

Ac



CHI PHAM
SUPERVISORY PATENT EXAMINER

4/27/07